

Total pectin content Assay Kit

Note: Take two or three different samples for prediction before test.

Detection instrument: Spectrophotometer

Cat No: AK0313

Size: 50T/24S

Components:

Extract solution 1: 110 mL × 2, stored at 4°C.

Extract solution 2: 70 mL × 1, stored at 4°C.

Reagent 1: 60 mL of concentrated sulfuric acid, provide for oneself.

Reagent 2: 3 mL × 1, stored at 4°C.

Reagent 3: 5 mL × 1, stored at 4°C and protected from light.

Standard: powder × 1, 10 mg of galacturonic acid, stored at 4°C. 0.943 mL of Extract solution 2 is added to prepare a standard solution of 50 μmol/mL before use.

Product Description:

Pectin is one of the main components of plant cell walls, and is divided into water-soluble pectin and insoluble pectin (original pectin or alkali-soluble pectin). Pectin is a natural polymer compound with good gelling and emulsifying stability. It has been widely used in food, medicine, daily chemical and textile industries.

The original pectin is hydrolyzed into soluble pectin in dilute acid. It and the original soluble pectin is further converted into galacturonic acid. The product is condensed with carbazole in a strong acid to form a purple-red compound, which has a characteristic absorption peak at 530 nm.

Required material

Table centrifuge, spectrophotometer, water bath, concentrated sulfuric acid, mortar/homogenizer, 1 mL glass cuvette, adjustable pipette and distilled water.

Procedure:

I. Extract Total pectin:

The tissue sample is mashed. The ratio of the sample mass (g) and the volume of the Extract solution 1 (mL) is 1: 20 (recommended to take about 0.05g of sample and add 1 mL of Extract solution 1), place it in a 90 °C thermostatic water bath, extract for 30 min, remove and cool, centrifuge at 5000g and 25°C for 10 min, remove the supernatant, add 1mL of Extract solution 1 to the precipitate, repeat the operation once, remove the supernatant after centrifugation, add 1mL of Extract solution 2 to the precipitate, and place at 90°C thermostatic water bath. It is hydrolyzed in a water bath for 1 h. After cooling, it is centrifuged at 8000g and 25°C. for 15 min. The supernatant is take for measurement.

II. Determination procedure:

1 Preheat the spectrophotometer 30 min, adjust wavelength to 530 nm, set zero with distilled water.

- 2 Preparation of standard solution: Dilute 50 $\mu\text{mol/mL}$ standard solution with Extract solution 2 to 1、0.5、0.25、0.125、0.0625、0.03125 $\mu\text{mol/mL}$ standard solution for future use.
- 3 Add reagents with the following list:

Reagent name (μL)	Blank tube (B)	Standard tube(S)	Control tube(C)	Test tube (T)
Sample	-	-	100	100
Standard solution	-	100	-	-
Distilled water	100	-	-	-
Reagent 1	800	800	800	800
Mix well, leave it at 90 °C for 10min, and remove it and cool.				
Reagent 2	-	-	100	-
Reagent 3	100	100	-	100

Mix well, after standing at 25°C for 30 minutes, and measure the absorbance at 530 nm of each tube and record them as A_B , A_S , A_C , and A_T . $\Delta A_S = A_S - A_B$, $\Delta A_T = A_T - A_C$.

III. Calculation of Total pectin content:

- 1 Drawing of standard curve:

Taking the concentration of each standard solution as the x-axis and its corresponding ΔA_S as the y-axis, draw a standard curve to get the standard equation $y = kx + b$, and bring ΔA into the equation to get x ($\mu\text{mol/mL}$).

- 2 Calculation of Total pectin content:

$$\text{Total pectin content } (\mu\text{mol/g fresh weight}) = x \times V_{E2} \div W = x \div W$$

V_{E2} : Add the volume of Extract Solution 2, 1 mL;

W: Fresh sample weight, g.

Note:

1. Concentrated sulfuric acid is highly corrosive. Pay special attention when operating. After heating and cooling at 90°C, open the lid to prevent liquid splashing and burns.
2. If the absorbance is greater than 0.8, the sample Extract solution 2 can be appropriately diluted and then measured, and multiplied by the dilution factor in the calculation formula.

Examples:

1. Add 0.1g apple pulp to 1mL extract solution and grind thoroughly on ice, take supernatant, follow the determination procedure to operate, with 96-well flat-bottom plates to calculate: $\Delta A = A(T) - A(B)$
 $= 0.34 - 0.05 = 0.29$, standard curve: $y = 0.7498x - 0.017$, calculate $x = 0.364$, according with mass of sample to calculate: Total pectin content ($\mu\text{mol/g mass}$) = $x \times 5(\text{dilution ratio}) \div W = 36.4 \mu\text{mol/g mass}$.

Related Products:

AK0195/AK0194	Pectinase Activity Assay Kit
AK0131/AK0130	Protopectin Content Assay Kit
AK0189/AK0188	Ploygalacturonase (PG) Activity Assay Kit